SAMPLE COLLECTION AND STORAGE 7.2.2

Samples can degrade significantly during extended storage. To minimize sample degradation, and thus avoid negative bias in the measurement of BOD_5, analyze samples promptly or store chilled without freezing (maintain a temperature from 1 to 4°C). Chilling the sample is not necessary if the analysis begins within 2 hours of collection (American Public Health Association and others, 1995).

- If a sample is refrigerated prior to analysis, allow the sample to warm to 20°C before starting the test. A sample may be removed from an ice chest or refrigerator during transit to allow it to warm to 20°C before analysis begins.
- It is optimum to start the BOD_5 analysis immediately after sample collection to minimize changes in bacterial concentration.
- **The maximum holding time of a sample to be analyzed for BOD is 24 hours.**

Never freeze samples.

Bacteria are commonly associated with suspended sediment, which can vary spatially and temporally along a stream cross section (Britton and Greeson, 1989). Like suspended sediment, the oxygen demanding compounds may not be equally distributed along a cross section. Where possible, use the equal-width-increment or equal-discharge-increment procedures described in NFM 4 to collect a BOD sample representative of the stream cross section.

When using cross-sectional, depth-integrating, or discharge-weighted methods:

1. Use a DH-81 or D-77 sampler in most situations (NFM 2). If stream depths exceed 5 meters, use the bag version of the D-77 sampler.
2. Clean all equipment thoroughly and rinse with sample water before use (NFM 3).
3. Collect samples using appropriate procedures and pour sample water into a compositing device (NFM 4; Edwards and Glysson, 1998).
4. Withdraw a composite sample from the sample-compositing device into a clean container of sufficient capacity to perform the desired BOD tests. The volume of sample depends on the number of BOD tests to be completed and any prior knowledge of BOD for the water of interest. Generally, a 1-L sample is sufficient.
5. Cap container securely and protect the sample from light during transport to the laboratory for analysis.
6. Store sample on ice if not processed and analyzed within 2 hours of collection.

If depth-width integrated or discharge-weighted methods cannot be used, collect a grab sample by a hand-dip method. A grab sample can be collected directly from the stream using a clean container of sufficient capacity (American Public Health Association and others, 1995).

When collecting a hand-dipped sample:

1. Grasp the sample container near the base on the downstream side of the bottle.
2. Plunge the bottle opening downward below the water surface. **Avoid contact with the streambed during this process.**
3. Allow the sample container to fill with the opening pointed slightly upward into the current.
4. Cap the container securely and protect the sample from light during transport to the laboratory for analysis.